

liquors during an attack, is incorrect. The diet should consist of nutritious liquids. As little restraint should be exercised over the patient as is consistent with propriety and safety; patients should never be intrusted, especially during the night, to females alone, as they frequently require to be restrained from acts of violence on themselves.

The treatment after the paroxysm has nothing peculiar, and the convalescence is generally rapid.

It will be seen by the above sketch, that Dr. Ware's plan of treatment differs from the generality of modes proposed, being however more allied to the expectant than to the others. We recommend an attentive perusal of his paper to the advocates of the stimulant school, as showing that equal advantages may be obtained without the use of narcotics, &c.

R. E. G.

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XIX. *Treatise on the Excision of Diseased Joints.* By JAMES SYME, Surgeon, &c. p. 163. 8vo. Plates V. Edinburgh, 1831.

The object of this work is to recommend the practice spoken of in the title, which seems to have been very successful, at least in Edinburgh, for out of seventeen cases of excision of the elbow-joint performed there, only two have terminated fatally, of which, one the author believes would have died from any operation whatever, while in the other, the disease was found so extensive as to render excision almost impracticable.

The considerations which give to this operation an advantage over that of ordinary amputation, are less ultimate hazard to the life of the patient and the preservation of the limb.

"The advantages of amputation are, that it quickly, easily, and effectually removes the disease; but these are balanced by the serious objection of its depriving the patient of a limb; and it may be added, that, though this operation cannot now be regarded as attended with much danger, it is certainly not by any means free from it. To say nothing of the ordinary bad consequences of amputation, I must here particularly notice the risk of inflammation and supuration of the lungs, or other internal organs, which renders the result of amputation far more unsatisfactory, especially in hospitals. Every one who has attended the Hotel-Dieu, must have remarked the frequency of death, or rather the rarity of recovery after the removal of limbs in such circumstances; and though the evil seldom goes to such an extent in other places, I am sure all practical surgeons must be familiar with it. It is also observed that adult patients who have suffered amputation for caries, often fall into bad health, and die of dropsy or some other chronic complaint within a year or two after the operation. These bad effects seem referable with most probability to the disturbance which is excited in the system by taking away a considerable part of the body; but, whatever be the true explanation of them, there can be no doubt as to the fact of their occurrence, which ought to be carefully remembered in making the comparison that is now attempted.

The great recommendation of excision is, that it saves the patient's limb; and the benefits accruing to him from this are so important and conspicuous, that unless the objections which can be urged against it, should appear after mature consideration to be very serious indeed, we ought not to hesitate in giving it the preference. These objections so far as I have been able to ascertain, are the following:—*First*, The difficulty of the operation. *Second*, Its danger. *Third*, The useless condition of the limb in which it has been performed."

Our author asserts with much confidence, founded on his experience, that even in old cases of diseased joints, when the sinuses are numerous, the texture of the surrounding parts much vitiated by suppuration and the effusion of serum, together with a synovial membrane converted into a thick, gelatinous substance, yet the operation is effectual.

He remarks, that—

“ With regard to the cartilage, it might be expected that no harm could result from leaving any part of it that remained sound; but here too the judgment of theory is reversed by experience, since it has been found that when any portion of the articulating surface was left, the disease required a subsequent operation. The cause of this is probably to be referred, not so much to any morbid process in the cartilage itself, as in the synovial membrane lining it, and in the spongy bone immediately subjacent, which has its tendency to morbid action excited by the injury sustained in its neighbourhood. The operation, therefore, essentially requires the removal of the whole cartilaginous surface.

Lastly, as to the bone, one not acquainted with the pathology of the osseous tissue, who examined the bones of various joints after maceration, might be apt to suppose that the diseased part could not be removed without sacrificing so large a portion of the whole as to render it useless and unworthy of preservation.” Mr. S. gives a representation in his work of an elbow-joint, which he amputated before adopting the plan of treatment now under consideration. In this the bones are much increased in thickness to a considerable distance from the articulation, and their surface in the whole of this extent is covered with irregular warty excrescences, which give it a rough tubercular appearance. “ When these tubercles are examined more particularly, they are found to consist of a compact osseous substance, which is smooth on the surface, and perforated with numerous apertures for the transmission of blood-vessels. This is new bone, and perfectly healthy in its actions; it resembles in all respects the callus, or new osseous substance, which effects the reparation of fractures, and is thrown out in consequence of the irritation of the disease. The truly morbid or carious portion of the bone occupies merely the articulating surfaces. The external shell of the spongy bone is removed by the disease, and the cancelli are exposed to view, presenting a rough surface composed of rigid plates and spiculae, which are white and more brittle than usual, so as to seem as if they had been subjected to the action of fire. The depth to which the bone is thus affected varies considerably, according to the origin of the disease. When the morbid action commences in the synovial membrane or cartilage, it is generally superficial: but when the inflammation is primarily seated in the substance of the spongy bone, as in the third kind of white swelling which has been mentioned, then, as has been already stated, the substance of the bone is more deeply affected, being often excavated into a hollow, which is carious over the whole of its surface. The extent of this cavity seldom, or rather never exceeds the bounds of the epiphyses, except sometimes in young subjects, where the bone has been widely altered by serofulous action, previous to suffering the inflammation which more immediately occasions the caries. From not distinguishing between the truly diseased bone and that effused in consequence of its irritation, it appears that a much larger portion has been taken away in some of the cases of excision hitherto published than there was any occasion for. Less than a half of the portions of the humerus and femur which were removed by Moreau and Crampton, I should certainly think, so far as can be judged from the evidence of their drawings, would have been sufficient for the purpose, in which case it is plain the limbs would have been much less shortened and weakened, and the magnitude and consequent severity of the operation diminished. As already stated, the caries seldom goes beyond the epiphyses, which are all the part of the bone that the surgeon requires to

remove except in the rare cases where the bone is found to be more extensively affected; and in these it will probably be most prudent to perform amputation."

Mr. Syme considers that in regard to the hazard of this operation, it is much inferior to that from a wound inflicted on a sound joint, and that the effect of it is rather to allay than to increase irritation, for patients have been observed to sleep better the night after the operation, than for a long time previously.

"It has been said, that after the joint is cut out, the bones must either unite together, so as to render the limb rigid and unserviceable, or, if it remain moveable, the attachments of the muscles having been separated, it must be no less unfitted for use by its flaccidity and want of subjection to voluntary motion. With regard to the first of these events, I think it cannot be denied that ankylosis of the shoulder or elbow, provided the other joints remained entire, so far from rendering the limb useless, would not prevent many of its usual actions, and certainly not to the extent of permitting it to be compared, in respect of utility, with an artificial substitute. But it has been ascertained by the sure decision of experience, that true ankylosis or osseous union does not occur generally or even frequently in these circumstances; indeed, I feel authorized to say, not without very great attention on the part both of the surgeon and patient in favouring its accomplishment, particularly in preserving absolute rest; but when no such precautions are used, the union is established by means of a tough, flexible, ligamentous-like substance that permits the bones to be used with more or less freedom, according to the exercise which they are made to undergo during the process of healing. And the voluntary motion, though at first impaired, or altogether lost, owing to the relaxation of the muscles, which is caused by the approximation of their attachments, necessarily resulting from the shortening of the bones, gradually returns, and ultimately becomes as strong as ever. What seems to occasion the greatest difficulty in conceiving the possibility of recovering voluntary power over the new joint, if joint it may be called, proceeds from inattention to the fact, that muscles or tendons, when cut away from their attachments, fix themselves to the parts on which they come to rest. Thus the muscles of a stump adhere round the bone, so as to enable the patient to use it with force and freedom; and when amputation is performed through the tarsus, the *tibialis anticus* and extensors of the toes fix themselves so as to counteract the extensors of the heel. Independently of theory, however, we have here the more satisfactory assurance of positive facts; and the cases related below, will, I trust, be considered sufficient evidence to show that it is possible to save limbs by excision of diseased joints, nearly, if not altogether, as useful as before they suffered from disease.

"In addition to the arguments against excision which have now been considered, it has also been objected that the operation affords no assurance against a return of the disease, but as this objection applies equally to amputation, it need not be taken into account."

Mr. Syme recommends for this operation a long, narrow scalpel, which is to be thrust at once into the joint so as to open it freely; the parts covering the bones are then to be dissected up the proper distance, by keeping as near as possible to the bones, so as to leave the tendons and muscles. The bones are then to be sawed through with an amputating saw, which he thinks the most convenient instrument; it is, however, sometimes better to finish the division of them with the bone pliers. The hæmorrhage, though free in the beginning, seldom persists so as to require the application of ligatures, but occasionally the latter are indispensable.

"The next part of the process is to place the edges of the wound in contact and retain them together, which is best effected by the interrupted suture, unless the integuments should be so very soft as to give way under the pressure of the threads, in which case compresses of lint must be used in their stead. It is always of most consequence to unite the edges of the transverse incision, if there is one, since, if they do not heal by the first intention, they are afterwards brought together with very great difficulty, and the broad cicatrix which results from their separation is very adverse to the mobility of the joint. Some compresses of lint ought to be applied over the flaps, and then the limb being placed in a proper position, that, namely, in which it will most frequently be required after the cure is completed, it ought to be enveloped with a long roller, which affords the requisite support much better than splints or rigid cases of tin or pasteboard.

"The constitutional disturbance, for the reasons already stated, is usually very slight, and requires nothing more than some gentle purgative or slight antimonial, with spare diet and rest. The pain is usually severe for the first five or six hours, but then subsides, and seldom proves troublesome afterwards. The dressings ought to be changed ten or twelve hours after the operation, by which time the oozing of blood and serum will be at an end; and then also any inequality or gaping of the edges may be rectified by slips of sticking-plaster. Union by the first intention sometimes takes place through nearly the whole line of incision, except where old sinuses exist in its course; more frequently the adhesion is only partial and the wound opens out more or less widely, according to the degree of local inflammation, and the distention caused by blood contained within its cavity. In the course of a few days, the discharge, which was at first copious and offensive, begins to diminish; all the clots of blood issue from the wound; the swelling subsides; and the favourable change is altogether so sudden and satisfactory, as to surprise those who are not accustomed to witness the operation.

"During the cure, every means is to be employed either to keep the limb perfectly quiet, to favour ankylosis, or to exercise it in the degree and extent of mobility which will be required of it. The wound is generally very nearly healed in the course of a few weeks, but one or more sinuses continue to discharge for months or even a year or two. Small portions of bone also occasionally come away; but if the surgeon has done his duty in the first instance, he need not be under any apprehension on these accounts; and the patient will be too well pleased with being freed from the pain of his disease, and having regained the use of his limb, to feel annoyed by the trifling inconvenience which he thus experiences."

After these general observations, Mr. Syme gives a narrative of the cases where he has applied successfully this operation to the shoulder, the elbow, the knee, and the foot, the details of which it is not necessary to introduce here. Some of the recoveries were certainly of the most gratifying kind, and highly honourable to the science of surgery.

We present in extenso his methods of operating on some of the joints, as it would be difficult to give an abstract of them with justice to the author.

In the case of the shoulder, he says—

"I believe that the best way of bringing the bones completely within reach with least injury to the soft parts, is to make a perpendicular incision from the acromion through the middle of the deltoid, nearly to its attachment, and then another shorter one upwards and backwards from the lower extremity of the former so as to divide the external part of the muscle. The flap thus formed being dissected off, the joint will be brought into view, and the capsular ligament, if still remaining, having been divided, the finger of the surgeon may be passed round the head of the bone, so as to feel the attach-

ments of the spinati and subscapular muscles, which can then be readily divided by introducing the scalpel first on the one side and then on the other. After this the elbow being pulled across the forepart of the chest, the head of the humerus will be protruded, and may then be easily sawn off while grasped in the operator's left hand. The subsequent part of the operation will be conducted on the principles already explained, and as it is of course desirable to preserve as much mobility as possible, no means should be used to restrain motion further than are necessary for preventing irritation and displacement. The *pectoralis major* and *latissimus dorsi* tend to draw the extremity of the bone inwards, but this may be easily prevented by placing a cushion in the axilla."

In the operation on the elbow, he recommends the patient lying with his face downwards, on a sofa or table.

"It is always right to take away the whole of the sigmoid cavity of the ulna, which comprehends the olecranon and coronoid processes, together with the head of the radius and extremity of the humerus as high as its tuberosities. More than this, for the reason just mentioned, need not be removed; and a smaller portion would not include the whole of the cartilaginous surface, none of which, according to the general principle already explained, ought ever to be allowed to remain.

"The easiest way of accomplishing this, is to remove the olecranon in the first place; then to cut the lateral ligaments of the joint, so as to free the extremity of the humerus, and saw it off; lastly, to detach, by means of cutting-pliers, the head of the radius, and the remaining part of the sigmoid cavity. The reason for not separating at once the whole of the ulna that requires to be removed is, that, in case it is divided below the insertion of the *brachii* *internus*, its removal becomes extremely difficult. Having experienced this inconvenience in one of my first cases, I have since always proceeded as has just been described, and never found any difficulty in detaching the coronoid process after gaining the free space that was afforded by removing the olecranon.

"A simple longitudinal incision will not give sufficient access to the joint to allow of its excision, even in a sound state of the parts, much less when they are thickened and preternaturally adherent, as in cases of caries. An additional transverse cut was therefore proposed by Mr. Park, intersecting the other at right angles; but this plan labours under the double objection of splitting the triceps, and not permitting free exposure of the humerus. A method still more objectionable, on the ground of unnecessarily injuring the muscles, is to make a longitudinal incision, and two transverse ones at its extremities, so as to form two lateral flaps. By far the best plan that has yet been contrived, is that of Moreau; and though it may appear at first sight complicated and destructive to the soft parts, it is really the easiest and least injurious that can be imagined." In making the transverse cut, which should be close above the olecranon, the ulnar nerve is apt to be wounded or divided; and though the facts mentioned below make this injury appear of very little consequence, as there can be no advantage in inflicting it, the surgeon ought to use the precaution of ascertaining the situation of the nerve before introducing the knife. The thickening of the limb is sometimes not so great as to prevent the nerve from being felt, but more frequently its situation can be discovered only by recollecting its position relatively to the bones; it lies close to the inner edge of the olecranon, and will certainly be cut if the transverse incision is prolonged further than this towards the internal tuberosity of the humerus. The surgeon, therefore, ought to feel for the olecranon, and introduce his knife close to its upper surface, with the back turned towards its inner margin, but somewhat nearer its radial side. Having thrust the knife down into the joint, he ought to cut transversely, with a sawing motion, so as to insure the division of the tough tendinous parts, until he arrives at the radial tuberosity of the humerus. He may then make the longitudinal incisions, which

should extend about an inch and a half upwards and downwards, without any danger whatever, as the oblique course of the nerve recedes from the line of division. Both flaps should be dissected previously to commencing the excision of the bones, and it is thus rendered much easier than when the exposure is confined to the part that is to be first removed. The hæmorrhage is generally profuse immediately on the incisions being made, but soon diminishes, and seldom persists to such extent as to require the application of a ligature; on the principle already stated, however, it is right to secure any vessel, however small, that threatens to continue to bleed. In those rare and perplexing cases, where the ulna is diseased below the coronoid process, and requires to be divided through its shaft, the interosseous artery is very apt to be divided, and must, of course, be tied. As to the humeral artery, it is always perfectly safe, being protected from injury by the whole thickness of the *brachialis internus*.

"There is a great variety in the difficulty which is experienced in performing this operation in different cases. The adhesions are sometimes so general and so firm that no way can be made without the knife; while, at other times, the suppuration has, as it were, already dissected the bones, so that the surgeon, after making his incisions, has little to do but to apply his saw and pliers for their removal. When the operation is concluded, the edges of the wound are to be stitched together; the limb ought to be half bent, and a long roller applied in the figure of eight to give it proper support."

In the operation on the knee—

"The patient being laid on his back, the surgeon should rapidly divide the integuments and other parts exterior to the joint, so as to open its cavity, and remove the patella. Having next cut the lateral ligaments, he may readily protrude the extremity of the femur, and saw off as much of it as seems necessary. He has lastly to take away the diseased part of the tibia, which can now be done very easily, by passing the knife round the head of the bone, so as to detach its connexions, and then sawing off a slice of the requisite thickness.

"During this process, the popliteal vessels may seem to be in danger, but really are not so—as the insulation of the bones is not performed until the ligaments which connect them together are divided, and no longer oppose their being separated from each other, so as to be more distant from the vessels. There is not much bleeding, but one or two of the articular branches may require to be tied. After the operation, a great difficulty has been experienced in bringing the limb into a straight position, owing to the contracted state of the flexor muscles, which still prevent extension, notwithstanding the relaxation that is afforded by shortening the bone. In this case, the surgeon must be satisfied with placing the limb on a double inclined plane, in as good a position as can be obtained by moderate force, exerted through the means of paste-board splints. In a few days it will be found that the tension gradually diminishes, and before long allows the leg to be completely straightened.

"During the cure it does not seem proper to insure absolute rest, in order to obtain a true ankylosis or osseous union, since the very long bone that would thus be formed, besides being extremely inconvenient to the patient, by rendering the limb perfectly rigid, could not fail to expose it to a great risk of fracture, by affording long levers to forces acting at the extremities. A great degree of flexibility, on the other hand, would unfit the limb for support and progressive motion, so that, while perfect immobility and free motion ought to be avoided, a slight degree of flexibility ought to be promoted. The chief difficulty of the cure consists in preventing the tendency to bend outwards, which is always strong, and, if not counteracted, most injurious to the appearance and usefulness of the limb. The best mode of opposing this distortion consists in the careful application of splints."

We have thus presented to the reader some of the most valuable features in this publication; the operation recommended has been so seldom performed in this country, that though we cannot advocate the practice upon personal experience, yet we think it worthy of candid consideration.